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in rain and humidity. At the mountain top, however, there is a dwarf or "elfin" forest of *Eugenia* and *Vaccinium*; yet the humidity is greater here than anywhere below. In this "elfin" forest is found the greatest development of epiphytes, not alone mosses and lichens, but also liverworts, orchids, and even filmy ferns.

The final sections deal with the strand formations, which have but a meager development in the region studied. The strand vegetation closely resembles that of the Javanese strand, described by SCHIMPER, and need not be reviewed fully. The chief formations are the Pes-Caprae and *Barringtonia-Pandanus* formations of sandy shores and the Mangrove-Nipa-Acanthus formation of muddy shores. The *Bambusa-Parkia* formation encroaches rapidly on these shore formations. It is suggested that in other portions of the Philippines the climax forest differs from the dominant *Bambusa-Parkia* forest of the region described. It is unnecessary to point out the great importance of this study. It might have been anticipated that the broad principles of succession are as applicable to tropical as to temperate regions, but it remained for WHITFORD to show this to be the case.—H. C. COWLES.

Ascocarp of *Lachnea*.—Miss FRASER¹³ has recently discovered another case of supposed reduced fertilization similar to that described for *Humaria granulata* by BLACKMAN and FRASER. In *Lachnea stercorea*, a form in which a functionless antheridium and trichogyne are said to be present, she finds the archicarp arising, as described by WORONIN for *Lachnea scutellata*, from a lateral branch of the multinucleate cells of the mycelium. Five or more cells are formed, the terminal one of which becomes the ascogonium. This ascogonium, which is multinucleate, gives rise to a branch, into which pass several nuclei. When mature this branch, which is regarded as a trichogyne, contains five or six multinucleate cells, the terminal one becoming greatly enlarged and containing many nuclei. The position and degree of development of this trichogyne seems to vary greatly, developing as a terminal or lateral structure, which may or may not be entirely inclosed by the investing hyphae. Miss FRASER regards this trichogyne as intermediate in structure between that of *Pyronema* on the one hand, where a unicellular functioning organ is well developed, and *Physcia* or *Collema* on the other hand, where the trichogyne is multicellular and functioning. Although the position and origin of the antheridium does not appear to have been definitely worked out, the author believes it to arise from the cell next below the ascogonium, that it is a unicellular multinucleate structure, similar to that of *Pyronema*, and that it fuses with the terminal cell of the trichogyne. In some cases no trace of the trichogyne could be found, and it is believed that it fails to develop, as in *Humaria*. The nuclei of the antheridium often remain in the cell and degenerate *in situ* or pass into the terminal cell of the trichogyne. Fertilization by the fusion of male and female nuclei in the ascogonium does not occur, there-

¹³ FRASER, H. C. I., On the sexuality and development of the ascocarp in *Lachnea stercorea* Pers. *Annals of Botany* 21:349-360. pls. 29, 30. 1907.

fore, but the nuclei of the ascogonium were observed fusing in pairs, a condition also found in *Humaria*. This fusion occurs at various stages in the development of the ascogonium, either when it is very young or very old, and not at a certain stage in its development, as described for *Pyronema*. Since *Pyronema* possesses a functioning trichogyne and fertilization occurs by the fusion of sexual nuclei, Miss FRASER would regard *Lachnea stercorea* as intermediate between *Pyronema* and *Humaria*, in which no trichogyne is present. A much-branched ascogenous hyphal system is formed from the ascogonium in the usual fashion, the asci arising from the binucleate subterminal cells. The two nuclei fuse to form the ascus nucleus, which divides by successive divisions to form the nuclei of the eight ascospores.—J. B. OVERTON.

Polymorphism of Hymenomycetes.—Some interesting results bearing on the polymorphism of the Basidiomycetes were obtained by LYMAN¹⁴ in a series of cultures. It is stated that about 75 species belonging to the Polyporaceae, Hydnaceae, and Thelephoraceae were grown in pure cultures and that about 40 per cent. of these possess some secondary method of reproduction. In the present paper six species are treated, all but one belonging to the Thelephoraceae. The most interesting results were obtained in connection with two *Fungi imperfecti*: *Michenera artocreas* B. & C. and *Aegerita candida* Pers. *Michenera* was shown to be the conidial form of *Corticium subgiganteum* Berk., with which it had often been found associated. The spores of *Aegerita candida* yielded a form of *Peniophora* which had not been described, and consequently becomes *P. candida* (Pers.) Lyman. Several other forms of *Corticium* were found to have secondary spore forms, either conidia, chlamydospores, or bulbils. A peculiar tendency toward a differentiation of the mycelia of these fungi into juvenile and adult forms was noted in most of the species. The most pronounced example illustrating this tendency is *Corticium alutaceum*. The basidiospores of this form produce a mycelium with slender hyphae without clamp connections which bears conidiophores; and later the adult mycelium with large hyphae having clamp connections but without conidiophores. Continuous cultures of conidia produce more and more persistent juvenile mycelium. The adult mycelium is not entirely suppressed, however, if the culture has sufficient nutriment to permit continued growth.

The cultures with *Lentodinium squamulosum* are of special interest, for they seem to show that this peculiar and much-discussed fungus is an autonomous plant and not, as many writers have believed, an abnormal form of *Lentinus tigrinus*. In pure cultures the spores of the fungus give rise to a mycelium which finally produces fruit-bodies having all the characters, including the peculiar chambered hymenophore, of the parent. This form produces conidia from the veil and from the margin of the young pileus. Careful studies of this kind throw much-needed light on the biology of the higher fungi, whose life-histories present many obscure points.—H. HASSELBRING.

¹⁴ LYMAN, GEO. F., Culture studies on the polymorphism of Hymenomycetes. Proc. Boston Soc. Nat. Hist. 33:125-209. pls. 18-26. 1907.